CLAIMS

1. An image input apparatus having an image reading unit which is constructed by arranging plural chips integrally wherein

a stepwise difference in density between image signals which are respectively read by adjacent chips consisting of plural read pixels, which chips have different reading sensitivities, is successively calculated at a time of image reading, and

the image signals which are respectively read by the adjacent chips are compensated such that the difference in density between the image signals is compensated.

2. The image input apparatus of Claim 1

having a gamma compensation value only for one chip among the plural chips as a reference, and

compensating the image signals for the chip as the reference and other chips by employing the gamma compensation value.

3. The image input apparatus of Claim 2 wherein

the stepwise difference in density of the image signals between the adjacent chips is calculated for image data which has been subjected to the compensation of the image signals by

employing the gamma compensation value, and

the stepwise difference in density is uniformly added to chips except for the chip as the reference.

4. The image input apparatus of Claim 2 wherein

the stepwise difference in density of the image signals between the adjacent chips is calculated for image data which has been subjected to the compensation of the image signals by employing the gamma compensation value, and

the stepwise difference in density is added to respective pixels in stages for chips except the chip as the reference from the end of the chips.

5. The image input apparatus of any of Claims 1 to 4 wherein,

in calculation of the stepwise difference in density between the image signals,

a difference of pixel data on the chip boundary is taken as the stepwise difference in density between the image signals.

6. The image input apparatus of Claim 5 wherein,

in the calculation of the stepwise difference in density between the image signals,

a mean of differences of pixel data on chip boundaries for several lines is taken as the stepwise difference in density between the image signals.

7. The image input apparatus of Claim 6 wherein,

in the calculation of the stepwise difference in density between the image signals,

in a case where the mean of the differences of the pixel data on the chip boundaries for several lines is calculated, when the difference exceeds a threshold value, the difference value is excluded from the calculation of the mean.

8. The image input apparatus of Claim 6 wherein,

in the calculation of the stepwise difference in density between the image signals,

the calculation of the stepwise difference in density between the image signals is started after being delayed from a real reading start by the number of lines which are required for calculating the mean value of the stepwise differences in density between the image signals.

9. The image input apparatus of Claim 8 wherein

the calculated stepwise difference in density is added from a first line of read image data, and

last lines, by the number of which lines the calculation of the stepwise difference in density has been delayed, are not processed.

10. The image input apparatus of Claim 8 wherein

the calculated stepwise difference in density is added from a first line of read image data, and

last lines, by the number of which lines the calculation of the stepwise difference in density has been delayed, are subjected to addition with a lastly calculated stepwise difference in density.

11. The image input apparatus of Claim 8 wherein

the calculated stepwise difference in density is added starting from a line of the read image data, delayed by the number of lines which are required for calculating the stepwise difference in density, and

the lines from the start, by the number of which lines the calculation is delayed, are not processed.

12. The image input apparatus of Claim 8 wherein

the calculated stepwise difference in density is added starting from a line of the read image data, delayed by the number of lines which are required for calculating the stepwise difference in density, and

an initially calculated stepwise difference in density is added to the lines by the number of which lines the calculation is delayed from the start.

13. The image input apparatus of any of Claims 1 to 12 wherein,

when real-time screen display of an input image is performed, the screen display is performed from a line which has been subjected to the addition of the stepwise difference in density between the chips.

14. The image input apparatus of Claim 13 wherein

the calculated stepwise difference in density is added from a first one of the read lines,

when last several lines are not processed, display is performed on a screen from the first line, and

the last several lines which are not processed are not displayed on the screen.

15. The image input apparatus of Claim 13 wherein,

when the calculated stepwise difference in density is added from a line delayed by several lines, the line delayed by the several lines to the last line are displayed on the screen.

16. The image input apparatus of Claim 1 comprising:

a density stepwise difference correcting means for, when the calculated stepwise difference in density is compared to a predetermined threshold value and the calculated stepwise difference in density is larger than the threshold value,

correcting the calculated stepwise difference in density.

17. The image input apparatus of Claim 16 wherein

the density stepwise difference correcting means makes the stepwise difference in density 0 when the stepwise difference in density is larger than the threshold value, thereby correcting the calculated stepwise difference in density so as not to perform compensation of the stepwise difference in density between the image signals.

18. The image input apparatus of Claim 16 wherein

the density stepwise difference correcting means holds the stepwise difference in density at a predetermined value so as not to be larger than the threshold value when the stepwise difference in density is larger than the threshold value.

19. The image input apparatus of Claim 16 wherein

the density stepwise difference correcting means calculates the difference with increasing the number of lines of pixels in chips for calculating the stepwise differences in density when the stepwise difference in density is larger than the threshold value.

20. The image input apparatus of Claim 1 wherein

the stepwise difference in density between the image

signals in reading subsequent to the start of reading is compensated by employing a difference in density between the image signals, which difference is calculated at the start of reading.

21. The image input apparatus of Claim 1 wherein

prereading for intermittently reading a region is performed before reading is performed, and

the stepwise difference in density between the image signals is compensated by employing the stepwise difference in density, which difference is calculated at the prereading.

22. The image input apparatus of Claim 21 wherein

the stepwise difference in density which is calculated at the prereading is calculated from a mean of all image data obtained in the prereading.

23. The image input apparatus of Claim 21 wherein

the stepwise difference in density which is calculated by the prereading is stored, and the stepwise difference in density between the image signals is compensated by employing the stored stepwise difference in density.

24. The image input apparatus of Claim 21 wherein

the stepwise difference in density between the image

signals is compensated by applying to a stepwise difference in density of an intermittent region which is not a target to be read, a stepwise difference in density of a region which has been read immediately before the target region, at the prereading.